

Synchrophasor Project

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Abstract

Synchronized phasor measurements (synchrophasors) provide a real-time measurement of electrical quantities across a power system. These measurements can be used for control, measurement, and analysis of the power system. After the 2003 northeast blackout, the Federal government sponsored a program, called the Eastern Interconnect Phasor Project (EIPP), to collect and utilize synchrophasor data. MidAmerican Energy leadership wanted to participate in the EIPP. Raun substation, near Sioux City Iowa, was chosen as the location for the installation of a Phasor Measurement Unit (PMU). The PMU measures and sends synchrophasor data to the Tennessee Valley Authority for storage. A Schweitzer Engineering Laboratories 421 was used as the PMU. It was installed to measure 345 kV voltages at Raun, and currents on the Raun to Lakefield MN 345 kV transmission line. Challenges encountered and solutions found during the construction are discussed. The final system is described in detail.

Biography

Reno Lippold received his BS in electrical engineering from Iowa State University in 1982 and a MS in engineering management from the Air Force Institute of Technology, Dayton Ohio, in 1991. During his time as an Air Force officer, he served in multiple positions involving facility and utility design, construction, operations, and maintenance. Since 1998, he has been employed with MidAmerican Energy in the Sioux City Iowa substation operations department. The Sioux City substation operations department performs construction, testing, operations, maintenance, and design related to electrical substation equipment and systems. Reno is a registered professional engineer in the states of Iowa, Nebraska, and New York.